FIZELY, Yan (Jan)

See FISELI, Jan

FIZER, Bernard; MICHALSKI, Jan

Organophosphorous compounds with active methylene group. III. Addi-
tion of phosphinylacetic esters and their analogs to α, β-unsaturated
ethylenic derivatives. Rocz chemii 34 no.5:1461-1464 '60.
(EEAI 10:9)

1. Department of Organic Chemistry, Institute of Technology, Lodz.

(Methylene group) (Phosphorus) (Esters)
(Ethylene)

FIZER, L
    Khimiya prirodnykh soyedineniy fenantrenovogo ryada (Chemistry of natural
compounds of the phenanthrene series by L. Fizer i M. Fizer) Perevod s angliy-
skogo V. M. Rodionova. Moskva, Goskhimizdat, 1953.
    656 p. diagrs., tables
    "Literatura" at end of chapters.
So: N/5
     614.615
     .f5

FIZER M.
  Khimiya prirodnykh soyedeneniy fenantrenovogo ryada (Chemistry of natural compounds of the phenanthrene series by L. Fizer) Perevod s angliy-skogo V. M. Rodionova. Moskva, Goskhimizdat, 1953.
  656 p. diagrs., tables
  "Literatura" at end of chapters.

GALAKTIONOV, A.T.; DENISOV, Yu.A.; KOPYTOV, G.T.; MASLOV, Yu.A.; NIKONOV,
I.P.; PETUNIN, I.V.; KOCHEVA , G.N.; KUZNETSOV, A.P.; LELEKO,
N.M.; RAZIKOV, M.I.; SPESHKOV, V.V.; STEPANOV, B.V., STEPANOV,
V.V.; kand. tekhn. nauk; SHELOMOV, B.Ye.; YUNYSHEV, G.P.; YES'KOV,
K.A., dots., retsenzent; BAKSHI, O.A., dots., retsenzent; BEREZKIN,
P.N., dots., retsenzent; PATSKEVICH, I.R.,dots., retsentzent;
RUDAKOV, A.S., dots., retsenzent; FIZHBEYN, N.B., inzh., retsen-
zent; KHRUSTALEV, L.Ya., inzh., retsenzent; KRUTIKHOVSKIY, V.G.,
inzh., red. BOBROV, Ye.I., kand. tekhn. nauk, red. DUGINA, N.A.,
tekhn. red.

[Welding handbook] Spravochnik rabochego-svarshchika. Pod red.
V.V.Stepanova. Moskva, gos. nauchno-tekhnizd-vo mashinostroit.
lit-ry, 1960. 640 p.   (MIRA 14:6)
                    (Welding)

FIZHENKO, L. V.

"Variations in Carbohydrate Metabolism Due to the Influence of Purified
Endotoxins of Dysentery Bacilli, and the Effect of Sanasine Under Conditions
of Such Intoxication." Cand Biol Sci, Kharkov Veterinary Inst, Khar'kov, 1953.
(RZhBiol, No 4, Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher
Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

FIZHENKO, N.V.

Vitamin A content in the blood of newborn children. N. V. Fizhenko and M. P. Shcherbakova. *Voprosy Pediat. i Okhrany Materinstva i Detstva* 16, No. 5, 29-31 (1948).—Vitamin A in a group of 50 babies (new born; samples taken from the termination of placenta) varies from traces to 24.4 γ %; carotene varies within similar limits. Usually the figures are lowest in the 1st 6 months of the year (av. 10.8 γ % vitamin A and 2.08 γ % carotene), and highest in last 3 months (av. 12.82 γ %, and 14.80 γ % resp.). G. M. K.

BRAUN, A.D.; FIZHENKO, N.V.

Alteration of frog erythrocytes induced by adenosine triphosphate and sodium pyrophosphate. TSitologiia 2 no.6:717-723 N-D '60.

(MIRA 13:12)

1. Laboratoriya biokhimii kletki Instituta tsitologii AN SSSR, Leningrad.

(ERYTHROCYTES)   (ADENOSINE TRIPHOSPHATE)
(SODIUM PYROPHOSPHATES)

BRAUN, A. D. and FIZHENKO, N. V.

"Resistance of Erythrocytes and Their Proteins to the Effect of Heat and Some Other Denaturants in Frogs." pp. 7

Institute of Cytology AS USSR   Laboratory of Cell Biochemistry

II Vnuchnaya Konferentsuya Instituta Tsitologii AN USSR.   Tezisy Dokladov (Second Scientific Conference of the Institute of Cytology of the Academy of Sciences USSR, Abstracts of Reports), Leningrad, 1962   88 pp.

JPRS 20,634

BRAUN, A.D.; NESVETAYEVA, N.M.; FIZHENKO, N.V.

Resistance of actomyosin in the myocardium and skeletal muscles
to the denaturing effect of heat, ethyl alcohol and urea.
TSitologiia 5 no.3:335-338 My-Je '63.   (MIRA 17:5)

1. Laboratoriya biokhimii kletki Instituta tsitologii AN SSSR,
Leningrad.

BRAUN, A. D.; NESVETAYEVA, N. M.; FIZHENKO, N. V.

"The relation between denaturation capacity of proteins
and resistance of cells and tissues to damage."

UNESCO — International Symposium on the Role of Cell Reactions in Adaptations
of Metazoa to Environmental Temperature.

Leningrad, USSR,   31 May - 5 June 1963

L 00970-66

ACCESSION NR: AR5015894   UR/0299/65/000/009/R027/RC27
                                                           577.3
SOURCE: Ref. zh. Biologiya. Svodnyy tom, Abs. 5R173   5

AUTHOR: Braun, A.D.; Nesvetayeva, N.M.; Fizhenko, N.V.   B

TITLE: Connection between the resistance of cells and tissues to injury and the
denaturing capacity of proteins

CITED SOURCE: Sb. Kletka i temperatura sredy. M.-L., Nauka, 1964, 228-232

TOPIC TAGS: protein, histology, cell physiology

TRANSLATION: Data are given showing the presence of a positive correlation be-
tween the thermostability of organisms and that of proteins secreted by them. It
is noted that when the thermostability of the proteins is increased, their resis-
tance to other denaturing agents (alcohol, hydrostatic pressure) also increases.

SUB CODE: LS   ENCL: 00

Card 1/1

FIZHENKO, V.V.

C

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Viscosity of industrial glasses. K. G. Kumanin, V. V. Fizhenko, and B. I. Zelenchuk. *Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk, Inst. Mashinovedeniya, Soveshchanie Vyazkosti Zhidkostei i Kolloid. Rastvorov* (Conf. on Viscosity of Liquids and Colloidal Solns.), 1, 327-29 (1941); abstracted in *J. Soc. Glass Technol.*, 29 [133] 97 (1945).—At varying conditions of temperature, the inner structure of melts can be characterized by the viscosity and the coefficient of temperature. It is not possible to define exactly the upper and lower limits of the viscosity, due to experimental difficulties. Attempts to classify experimental data are not successful owing to the insufficiency of comparison of isotherms (equal temperature) and isocoms (equal viscosity) and the great variety of industrial glasses. The temperature and the viscosity at the liquefying point, however, can represent a suitable criterion for comparison, thus giving a more exact picture of the change of viscosity in accordance with the chemical composition (isoliquids of the viscosity).

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FIZHENKO, V.V.

In memory of member and vice-president of the Ukrainian Academy
of Sciences, Doctor of Geological and Mineralogical Sciences,
Professor I.I. Svital'skii. Sov. geol. 7 no.11:155-158 N '64.
(MIRA 18:2)

1. Laboratoriya geologii dokembriya AN SSSR.

POCH OKY, V. A.

80th anniversary of Nikolai Ignat'evich Krishtal'skil's birth.
Zap.Vses.mineral.o-va 93 no.6:692-696 '64.

(MIRA 18:4)

1. Laboratoriya geologii dokembriya AN SSSR, Leningrad.

FIZHER, L.I., dotsent (Saratov)

Peculiarities of heat regulation patients suffering from hypertension.
Klin.med. 34 no.5:90 My '56.   (MLRA 9:10)

1. Iz fakul'tetskoy terapevticheskoy kliniki (dir. - prof. L.A.
Varshamov) Saratovskogo meditsinskogo instituta.
        (HYPERTENSION)   (BODY TEMPERATURE)

RADCHENKO, I.I.; BASHKATOV, T.V.; FIZHER, S.L.; RABINERZON, M.A.;
      PERMINOV, A.M.

Improvement of the production of butadiene-methylstyrene
(styrene) rubbers. Kauch. i rez. 23 no.4:1-6 Ap'64   (MIRA 17:7)

'. Vsesoyuznyy nauchno-issledovatel'skiy institut sintetiches-
kogo kauchuka imeni Lebedeva.

FIZHZON-RYSS, Yu.I.

Determination and clinical significance of the hourly secretion
rate of free hydrochloric acid. Lab.delo 7 no.9:32-33 S '61.
(MIRA 14:10)

(HYDROCHLORIC ACID)   (STOMACH—SECRETIONS)

FIZYUN, V.V.

Conditions for the growth of Anabasis aphylla in some districts of
South Kazakhstan Province. Trudy Inst. bot. AN Kazakh. SSR 5:270-
283 '57.   (MIRA 10:9)
          (South Kazakhstan Province--Anabasis (Botany))

CZECHOSLOVAKIA

Major Bronislav ZEMAN, graduate physician (promovani lekar), Lt Col
Josef NAVRATIL MD, Col Artur FLACH MD, Major Jiri BRET MD, Col Docent
Vladimir DUFEK MD; First Department of Internal Medicine and Radiology
Department of Central Military Hospital (I. vnitrni oddeleni a
rentgenologicke oddeleni Ustredni vojenske nemocnice.)

"Ways of Diagnosing Mitral Insufficiency."

Abstract [English summary modified]: Review of published literature and
of data in 39 patients: EKG, phonocardiogram, history-taking, X-ray,
electrokymography, esophagoatriography; heart catheterization and
angiocardiography only when mitral surgery is considered. Ten FKGs
or other functional graphs, angiocardiogram with explanatory drawing;
10 Czech and 13 Western references.

1/1

NAVRATIL,J.; RATHOVA,E.; ZEMAN,B.; FLACH,A.; DUFEK,V.

Importance of graphic demonstration of pulsation of the left ventricle in the esophagus (esophagoatrigram) in the diagnosis of mitral defect. Rozh. chir. 42 no.11:759-764   N'63.

1. I. vnitrni oddeleni UVN v Praze, nacelnik doc.dr. V.Dufek.

*

FLACH, A.; FABIAN, J.; POKORNY, J.; POCTA, J.; DUFEK, V.

Interruption of prolonged ventricular tachycardia with an electrical
charge. Cas. lek. cesk. 102 no.48:1330-1331   29 N '63.

1. Interni a anesteziologicke oddeleni UVN, Praha-Stresovice,
vedouci doc. dr. V. Dufek, CSc., a MUDr. J. Pokorny, CSc.

*

FLACH, R.

FLACH, R.

"With a Burning Parachute", P. 335, (KRIDLA VLASTI, Vol. 4, No. 14, July 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 1, Jan. 1955, Uncl.

FLACH, R.

List of aeronautic publications in 1953; publications of the Aviation League and the League of Soldiers Friends. p. 295. (SKRZYDLATA POLSKA, Vol. 10, No. 19, May 1954, Warszawa, Poland)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 3, No. 12, Dec. 1954, Uncl.

FLACH, R.

Aeronautics in the Palace of Friendship.   p. 4.

SKRZDLATA POLSKA. (Liga Lotnicza) Warszawa, Poland.
Vol.11, no.30, July 1955.

Monthly list of East European Accessions (EEAI) LC, Vol.9, no.1, Jan. 1959.

Uncl.

AUTHOR: Stuchlik, Jan (Engineer); Flachs, Vaclav

TITLE: Industrial television in metallurgical plants

SOURCE: Hutnicke listy, no. 11, 1964, 818-824

TOPIC TAGS: tv equipment, metallurgic industry, working condition

installation of television

installation must be protec...
..ll mittere and dust. The area...
...d transmission...
...riz. and...

...tables.

VVHZ - Vyzkum a vyvoj hutnich zarizeni (Department of Research and
...lopment of Metallurgical Equipment, VZKG.

SUBMITTED: 00	ENCL: 00	SUB CODE: MM, EC
NO REF SOV: 001	OTHER: 005	JPRS

Card 1/1

FLAKSMAYYER, Yu. [Flachsmeyer, J.]

Dini-convergence in a functional space. Dokl. AN SSSR   152 no.5:
1071-1074   O '63.   (MIRA 16:12)

1. Predstavleno akademikom P.S.Aleksandrovym.

BUDAGOV, Yu.A.; DZHELEPOV, V.P.; IVANOV, V.G.; LOMAKIN, Yu.F.;
       FLAGIN, V.B.; SHLYAPNIKOV, P.V.

   [Gas hydrodynamic design of the mechanism of pressure
   variation in a large-scale bubble chamber] Gidrogazodina-
   micheskii raschet mekhanizma izmeneniia davleniia bol'-
   shoi puzyr'kovoi kamery. Dubna, Izd-vo Ob"edinennyi in-t
   iadernykh issledovanii, 1963. 18 p.   (MIRA 16:10)
     (Bubble chamber)   (Fluid dynamics)

FLAJS, J.; STRAUS, St.

Development of public health in the Celje region during the first
10 years since the war. Zdrav.vest., Ljubljana 24 no.3:65-66 1955.

1. Celjska stevilka uredil Prof. Dr. M. Cunder.
       (PUBLIC HEALTH,
           in Yugosl., progr.)

FLAJSIG,P.

A case of fibrolymphangioma cysticum pancreatis. Srpski arh.
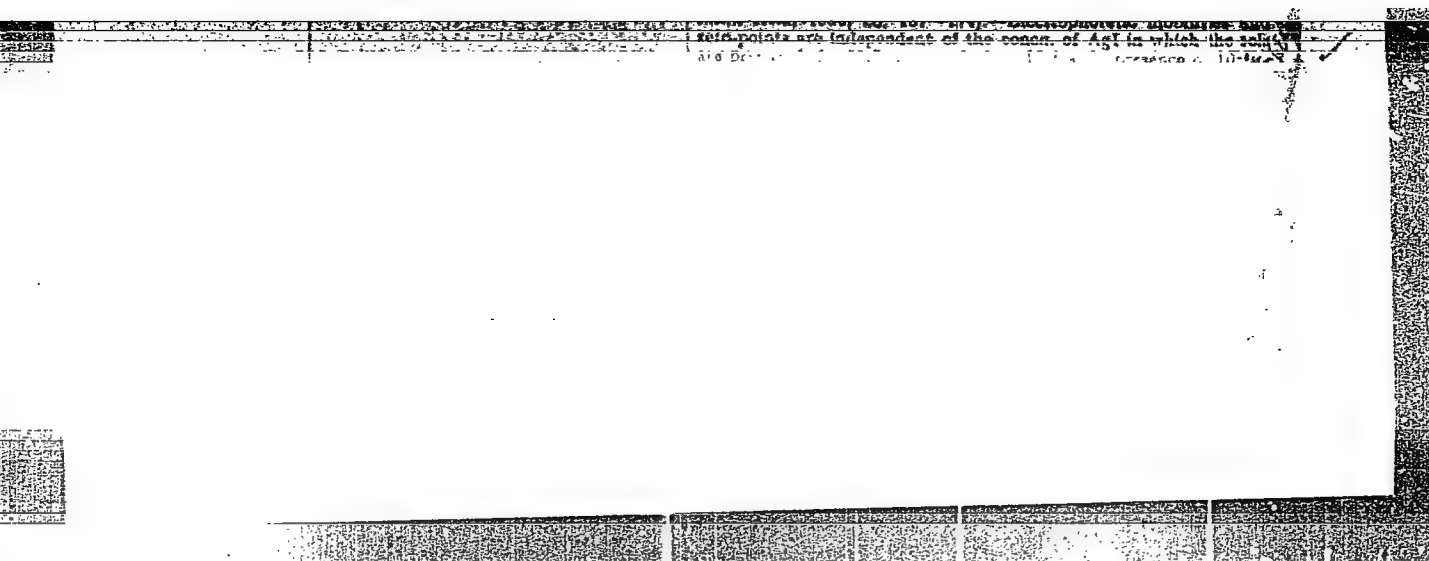celok. lek. 91 no.10:981-985   O'63

1. Hirursko odeljenje Opste bolnice u Bijeljini; sef: dr.Pavle
Flajsig.

system. The solubility limits of the 3 halides were practically the same in the region of NaNO₃ concns from 0.5 to 0.001
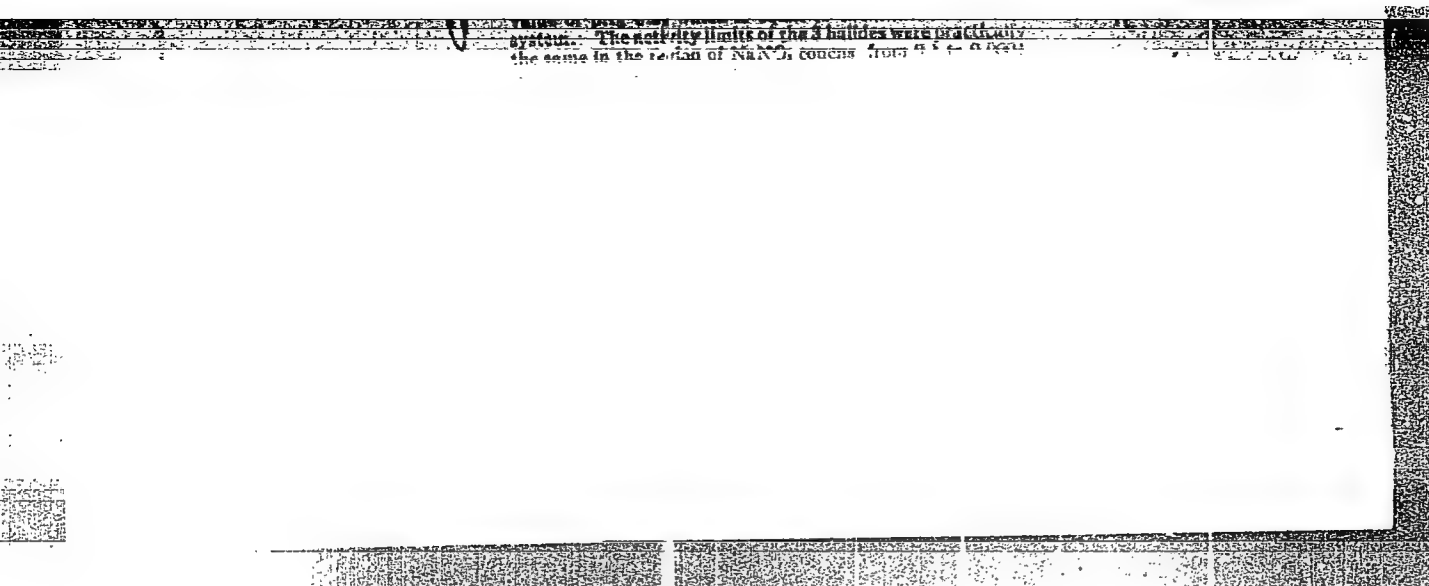
FLAJZAR, Borivoj; ROZSIVAL, Miroslav

      Photographic magazine for electron diffractograph. Cs cas
fys 14 no. 1:27-33 '64.

    1. Ustav fyziky pevnych latek, Ceskoslovenska akademie ved,
       Praha.

FLAK, S.

693.45 : 624.072.2 : 666.982.3 : 725.861

4222

Dąbrowski Z., Flak S. Precasting of Concrete Girders Poststressed by Cables for the Warsaw Ice-Ring Grand Stand.

„Produkcja prefabrykowanych dźwigarów kablobetonowych do trybun sztucznego lodowiska w Warszawie". Inżynieria i Budownictwo. No. 1, 1955, pp. 13—16, 7 figs., 4 tabs.

The authors describe all the production phases of 52 precast concrete girders poststressed by cables. The span of the girders is 21 m. The cement brands and the quality of sand, gravel and steel used for the concrete are enumerated, and a description is included of the manner of preparing the reinforcements and moulding of the members, the batching and placing of the concrete, and the poststressing of the girders. The authors point out that not basalt grit but only granite should be used, since latter adheres better with the cement mix. They also find it advisable to use for the cable channels sheet metal tubes with walls 0.3 — 0.5 mm thick instead of gas pipes. Moreover the moulds may, without any deterioration in the surface finish of the precast units, be lined with black sheet instead of zinked sheet.

TOMEK, Jiri, inz., C.Sc.; FLAK, Vladimir

Making fast drying floor concretes. Poz stavby 11 no.4:
209-212 '63.

1. Vyzkumny ustav stavebni, Gottwaldov.

FIALA, M., dr.; FLAK, V.

Jacketed floor coverings with insulation properties. Stavivo
41 no.9:329-331   S'63.

1. Vyzkumny ustav pozemnich staveb, Gottwaldov.

FLAKIEWICZ, Wieslaw

Breaking of the impasse. Przegl drob wytworcz 12 no. 5:10-11 March '62.

FLAKOWICZ, J.

Hydroengineering problems in designing automatic pump
over stations for sewages. Inz sanit Gliwice no.2:13-26
'62.

FLEKROWIEL   J,

POLAND/Chemical Technology. Chemical Products.Water Treating.   H-5

Abs Jour : Ref Zhur - Khimiya, 1958, No 22, 74424

Author   : Flekowicz J., Genczerczyk J., Rutkiowicz J.
Inst   : Not Given
Title   : Technical Aspects of Effluent Water Treatment (General
           Discussion)

Orig Pub : Gas, woda, techn. sanit., 1958, 32, No 1, 19-21

Abstract : No abstract

Card   : 1/1

7

FLAKOWSKI, A.

Work competition movement in Bydgoszcz Voivodeship, p. 7. (ROLNIK SPOLDZIELCA, Warszawa, Vol. 8, no. 2, Jan. 1955.)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 6, Jun. 1955, Uncl.

FLAKOWSKI, A.

FLAKOWSKI, AFL.

Production has started.

p. 6 (Rolnik Spoldzielca) Vol. 9, No. 41, Oct. 1957, Warszawa, Poland

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

57-28-3-24/33

AUTHORS: Flaks, I. P., Solov'yev, Ye. S.

TITLE: Measurement of Capture Cross Sections of Electrons for Singly
             Charged and Doubly Charged Ions of Natural Gases (Izmereniye
             secheniy zakhvata elektronov odnozaryadnymi i dvukhzaryadnymi
             ionami v "sobstvennykh" gazakh)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 3, pp. 599-
             -611 (USSR)

ABSTRACT: Here the cross section for the capture of one and two electrons
             by means of doubly charged ions was measured and the dependence
             of these cross sections on the ion energy was determined. More-
             over the cross sections for the resonance capture of the elec-
             trons by means of singly charged ions were determined. All
             measurements referred to the cases of interaction of the ions
             of inert gases and of the atoms of natural gases. The cross
             sections in the case of the singly charged ions were measured
             in the ion energy-range of $3 \div 30$ keV and in the case of
             doubly charged ions in that of $6 \div 60$ keV. The here applied
             method for the determination of the cross sections is based on
Card 1/3   the recording of fast atoms or ions which had formed from the

Measurement of Capture Cross Sections of Electrons for Singly 57-28-3-24/33
Charged and Doubly Charged Ions of Natural Gases

ions of the primary beam due to collisions with the gas
atoms happening but once, which were accompanied by the
capture of the electrons. The cross sections σ_{10} of the re-
sonance capture of the electrons was measured by means of the
Ne^+-, Ar^+-, Kr^+- and Xe^+-ions. The obtained data agree with
theory by Firsov (reference 1). The cross sections σ_{21} of the
capture of one electron by means of Ne^{2+}-, Kr^{2+}-, Ar^{2+}- and
Xe^{2+}-ions were measured. In the energy range investigated the
cross sections σ_{21} continuously increase with the ion energy.
The existence of the capture process of two electrons by means
of Ne^{2+}-, Ar^{2+}-, Kr^{2+}- and Xe^{2+}-ions was experimentally observ-
ed. The cross section σ_{20} of the capture of two electrons de-
creases in all cases investigated with the increase of ion
energy. For this reason it was concluded that the capture of
two electrons is a resonance process. Doctor of Physical and
Mathematical Sciences N. V. Fedorenko advised the authors.
Head of the Laboratory, Professor V. M. Dukel'skiy showed per-
manent interest in this work. There are 17 figures and 22
references, 11 of which are Soviet.

ASSOCIATION: Leningradskiy Fiziko-tekhnicheskiy institut, AN SSSR
Card 2/3

57-28-3-24/33

Measurement of Capture Cross Sections of Electrons for Singly
Charged and Doubly Charged Ions of Natural Gases

(Leningrad Physical - Technical Institute, AS USSR)

SUBMITTED: July 19, 1957

1. Electron capture 2. Electron cross sections   3. Natural gas
ions--Properties

Card 3/3

57-28-3-25/33

AUTHORS: Flaks, I. P., Solov'yev, Ye. S.

TITLE: The Determination of Capture Cross Sections of One and Two
             Electrons in Single Collisions of Double-Charged Ions With
             Gas Atoms (Opredeleniye secheniy zakhvata odnogo i dvukh
             elektronov pri odnokratnykh stolknoveniyakh dvukhzaryadnykh
             ionov s atomami gaza)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 3, pp.612-622
             (USSR)

ABSTRACT: The capture cross sections of one and two electrons in single
             collisions of double-charged Ne^{2+}-, Ar^{2+}-, Kr^{2+}- and Xe^{2+}-ions
             with the atoms of an inert "foreign" gas within the range
             of the ion-energy T from 6 to 60 keV are here determined in
             an experimental way. For the determination of the capture
             cross sections σ_{21} and σ_{20} the mass-spectrometry method
             of the recording of fast ions and fast neutral atoms (de-
             scribed in Reference 1) was employed. In the investigated
Card 1/4   energy range the authors observed an increase in the

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The Determination of Capture Cross Sections of One and Two Electrons in Single Collisions of Double-Charged Ions With Gas Atoms

σ_{21}-cross sections with increasing ion-energy. When $T = 60$ keV the σ_{21}-cross section is largest in the Xe^{2+}- -Ar-pair ($\sigma_{21} = 2.10^{-15}$ cm^2) and smallest in Xe^{2+}-He ($\sigma_{21} < < 10^{-18}$ cm^2). The existence of the capture process of two electrons in the case of Ne^{2+}-ions in He, Ar, Kr, Xe, in the case of Ar^{2+}-ions in Ne, Kr, Xe, in the case of Kr^{2+} in Ar, Xe and in the case of Xe^{2+} in the Ar, Kr was determined in an experimental way. In the case of the enumerated ion-atom- -pairs the σ_{21}-cross section increases with increasing ion-energy and is highly dependent on the nature of the ion and of the atom. In all investigated pairs at the same ion-velocity $\sigma_{21} > \sigma_{20}$, but in some pairs the cross sections σ_{21} and σ_{20} are very close to the absolute value. E.g. at $T = 60$ keV for the Ar^{2+} - Kr-pair the cross section $\sigma_{21} = 6.10^{-16}$ cm^2 and $\sigma_{20} = 5.10^{-16}$ cm^2. As a rule σ_{21} and σ_{20} are greater in collisions of light ions with heavy atoms. In two endothermic cases the cross sections of the capture of one electron and in 5 endothermic cases those of the capture of two electrons were measured. In endothermic cases the cross sections σ_{21} and σ_{20} as a rule decrease with increasing absolute value of the "resonance-defect" ΔE.

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The Determination of Capture Cross Sections of One and Two Electrons in   57-28-3-25/33
Single Collisions of Double-Charged Ions With Gas Atoms

In exothermic cases no definite dependence of the cross sec-
tions σ_{21} and σ_{20} on the quantity ΔE was found to exist.
By comparing the data for "symmetrical" capture processes of
two electrons differing by the sign of the quantity ΔE it
was found that in case that $|\Delta E| > 10$ eV, σ_{20} in the exo-
thermic case is considerably higher. In case that $|\Delta E| < 6$ eV
the magnitude of the σ_{20}-cross section is little dependent
on the sign of ΔE. The assumption is expressed that in the
exothermic case, ΔE having a considerable value, an excitation
of the colliding particles takes place. Data for the total
capture cross section $\sigma_{\Sigma} = \sigma_{21} + \sigma_{20}$ are given. These
characterize the general weakening of the double-charged
ion-beams in the different gases.
The authors were advised by N. V. Fedorenko, Doctor of Phy-
sical-Mathematical Sciences and V. M. Dukel'skiy, Professor.
There are 10 figures, 1 table, and 14 references, 4 of which
are Soviet.

Card 3/4

The Determination of Capture Cross Sections of One and Two Electrons in
Single Collisions of Double-Charged Ions With Gas Atoms   57-28-3-25/33

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut, AN SSSR
                (Leningrad Physical-Technical Institute, AS USSR)

SUBMITTED: July 19, 1957

                1. Electron capture--Determination   2. Electron cross sections
                3. Ions--Physical effects   4. Atoms--Physical effects

Card 4/4

FLAKS, I.P.

FEDORENKO, N.V.; FLAX, I.P.; FILIPPENKO, L.G.; SOLOVYEV, E.S.

"Electron Capture by Multiply Charged Ions."

report presented at the 4th Intl Conference on Ionization Phenomena in Gases, Uppsala, 17-21 August 1959.

FLAKS, I.P.

66702

24.2120 SOV/109-4-8-22/35

AUTHORS: Granovskiy, V.L., Luk'yanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.

TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1339 - 1358 (USSR)

ABSTRACT: The conference was organised by the Ac.Sc.USSR, the Ministry of Higher Education and Moscow State University. It was opened by the chairman of the organising committee, M.A. Leontovich, Academician. During the plenary sessions of the conference, a number of survey papers were delivered. L.A. Artsimovich read a paper on "Production of Ultra-high Temperatures in Plasma".

A survey of the optical method of measurements was given in the papers by V.A. Fabrikant and S.E. Frish. S. Brown of the Massachusetts Institute of Technology gave a survey of the high-frequency methods of the investigation of stationary and non-stationary plasma (see p 1244 in this issue of the journal).

N.V. Fedorenko read a paper entitled "Ionisation and Inelastic Scattering During Atomic Collisions".

Card1/15

L.A. Sena and Yu.M. Kagan deal with "Elementary Processes of Determining the Motion of Ions in Gas".

A paper by Ye. Bedersu (Rumania) dealt with "The Role of Resonance-recharging in the Kinetics of Ions".

I.S. Stekol'nikov considered the initial stages of the development of sparks (corona-leader, main channel and the final channel).

B.N. Klyarfel'd gave a survey of the ignition processes of the discharges in highly rarified gases.

The mechanism of the breakdown of a high-vacuum gap was elucidated in a paper by V.L. Granovskiy.

L. Tonks (USA) expounded a theory of the motion of electrons in a magnetic trap (see p 1316 of this journal).

Academician R. Rompe (Eastern Germany) described a number of experiments on non-stationary plasma conducted by himself.

M. Steenbeck (Eastern Germany) gave a generalised theory of plasma. The conference was divided into six sections.

The first section was presided over by L.A. Sena and was concerned with the elementary processes in gas discharges. The following papers were read in this section:

Ya.M. Fogel' - "Transformation of Positive Ions Into Negative Ones in Rarified Gases".

Ya. M. Fogel' with V.A. Ankudinov and D.V. Pilipenko - "Capture and Loss of Electrons During the Collision of Fast Atoms of Carbon and Hydrogen with the Molecules of Gases".

N.V. Fedorenko et al. - "Dissociation of Molecular Ions of Hydrogen During Collisions in Gas".

I.P. Flaks and Ye.S. Solov'yev - "Capture Cross-sections of Electrons in Multicharge Ions in Inert Gases".

R.N. Kushnir et al. - "Experimental Investigation of the Resonance Recharging in Certain Single-atom Gases and Metal Vapours".

O.B. Firsov - "Qualitative Investigation of Inelastic Collisions of Atoms".

L.M. Volkova - "Effective Excitation Cross-sections of the Spectral Lines of Potassium and Argon".

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I.P. Zapesochnyy and S.M. Kishko "Some Results of the Investigation of the Optical Functions of the Excitation Bands of a Negative System".

A.A. Vorob'yev and A.G. Vlasov - "Investigation of the Scattering of the Electrons in a Betatron Chamber".

The second section was presided over by B.N. Klyarfel'd and was devoted to the problems of the electrical breakdown in rarified gases and in high vacuum. The following papers were read in this section:

G.Ya. Makar-Limanov and Yu.A. Metlitskiy - "Electrostatic Control of the Ignition of Glow-discharge Tubes" (see p 1274 of the journal).

S.V. Ptitsyn et al. were concerned with the breakdown in a high-voltage mercury rectifier (see p 1278 of the journal).

L.G. Guseva "Ignition of the Discharge in Non-uniform Fields at low Gas Pressures" (see p 1260 of the journal).

A.S. Soboleva and B.N. Klyarfel'd - "The Discharge Phenomena Between a Point and a Plane at Gas Pressures of 10^{-3} - 1 mm Hg".

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77529)
SOV/57-30-1-8/18

AUTHORS: Fedorenko, N. V., Filippenko, L. G., Flaks, I. P.

TITLE: Scattering of Multiple Charged Ions With Simultaneous
              Electron Capture

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 1,
              pp 49-56 (USSR)

ABSTRACT: Introduction: Except for the Ar^{2+} Ar^{+}, scattering of
              multiple charged ions with simultaneous partial or
              total neutralization has not yet been studied, and
              the authors undertook to measure the scattering of
              particles obtained from primary Kr^{+}, Kr^{2+}, Kr^{3+},
              and Ne^{2+} ions after their partial or total neutralization
              in neon or crypton. The authors investigated at the
              same time the small angle scattering of ions without
              change in charge which can differ from the elastic
              process by exciting or ionizing the atoms of the
              scatterer. (I) Methods of measurements: The apparatus
Card.1/10   consisted of a mass-monochromator producing a

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monoenergetic primary ion beam, a scattering chamber,
and a movable magnetic analyzer. The diagram is shown
in Fig. 1.

Fig. 1. Schematic drawing of
the collision chamber and the
analyzer. (O) center of ro-
tation of the analyzer; (C_1)
deflecting condenser; (F_1)
collector of the primary
beam; (F_2) collector of fast
ions; (F_3) collector of fast
neutral atoms; (S_1) entrance
slit of the collision cham-
ber (size 4×1 mm); (S_2)
exit slit of the collision chamber (size 10×1 mm);
(S_3) adjustable entrance slit of the receiver F_2; (S_5)
entrance slit of the receiver F_3 (size 4×3.1 mm).
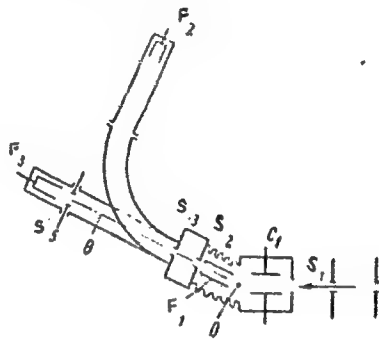
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Neutral particles reaching F_3, described in detail by
Flaks and Solov'yev (ZhTF,XXVIII, 599, 1958) were
registered by means of secondary emission. All
measurements were made for incoming ion energy of
33 kev. Keeping the pressure between 0.5 and $1 \cdot 10^{-4}$
mm Hg the authors maintained single collision conditions.
Incoming beam was of the order of 10^{-7} a, for singly
ionized atoms and 10^{-8} to 10^{-9} a, for the doubly and
triply ionized atoms. They measured differential cross
section not smaller than $1 \cdot 10^{-16}$ $cm^2 \cdot sterad^{-1}$ for
singly ionized atoms, $1 \cdot 10^{-15}$ $cm^2 \cdot sterad^{-1}$ for
doubly, and $1 \cdot 10^{-14}$ $cm^2 \cdot sterad^{-1}$ for triply charged
ions. Investigation in the 2.5 to 8° region showed
that in this interval the effects are below the

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sensitivity of the apparatus. Probable error was between

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+ 20 and 25%. (II) Results of measurements:
Figure 3 and 8 represent typical results. Overall
cross section was defined as

$$G(\theta) = \sum_{f=0}^{i} \left(\frac{\overline{d\sigma}}{d\omega}\right)_{if}. \qquad (2)$$

The authors concluded that, (1) scattering with a
total neutralization of primary ions favors smaller
scattering angles while processes with partial neu-
tralization occupy a wider region; this is true in
the case of scattering on the same kind of gas or on
a "foreign" element. (2) The larger the number of
electrons captured during the full neutralization,
the wider the scattering angle distribution of particles
(see Fig. 8). (III) Evaluation of results: The
authors estimated the value of the total cross-section
using the equation

$$\sigma_{if} = 2\pi \int_{0}^{\theta_{max}} \left(\frac{\overline{d\sigma}}{d\omega}\right)_{if} \sin\theta\, d\theta \qquad (3)$$

Card 4/10   where θ_{max} fixed the angle beyond which the effects

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Fig. 3. Scattering of
Kr^{2+} ions in Kr. (1)
scattering without
change or charge; (2)
transition $Kr^{2+} \longrightarrow Kr^{0}$;
(3) transition $Kr^{2+} \rightarrow$
$\longrightarrow Kr^{+}$; (4) overall
cross section $G(\theta)$.
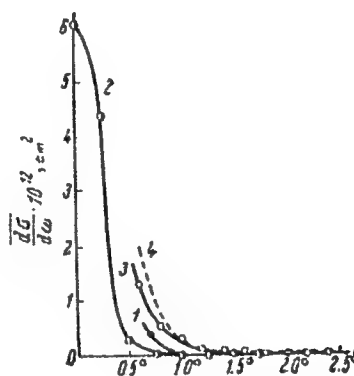
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Fig. 8. Scattering with
full neutralization of
primary ions. (1) $Kr^+ \to$
$\to Kr^0$ in K (ordinate
five times reduced);
(2) $Kr^{2+} \to Kr^0$ in Kr; (3)
$Kr^{3+} \to Kr^0$ in Kr; (4) Ne^{2+}
$\to Ne^0$ in Kr; (5) Ne^{2+}
$\to Ne^0$ in Ne.
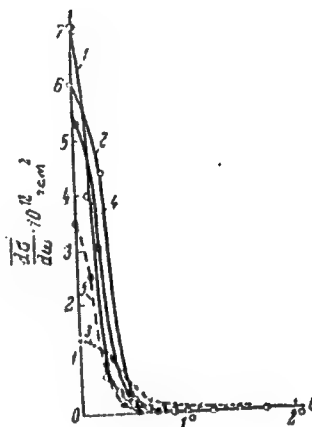
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were below the sensitivity of the apparatus. Compared
with results obtained by Flaks and others, who measured
the cross sections directly, the discrepancy was
never greater than 45%, which was within the limit of
errors of both sets of measurements. To estimate the
distance of approach, the authors used the classical
representation of trajectories, justified in view of ..
the small incident energies, and computed the sighting

parameter $\bar{\rho}\,(\theta_o)$

$$\bar{\rho}(\theta_0) = \sqrt{2 \int_{\theta_{\scriptscriptstyle0}}^{\theta_{max}} \left[\sum_f \left(\frac{d\bar{\sigma}}{d\omega}\right)_{ij} \right] \sin\theta d\theta} = \sqrt{2 \int_{\theta_0}^{\theta_{max}} G(\theta)\sin\theta d\theta}. \quad (6)$$

Table 2 contains computed values of $\bar{\rho}\,(\theta_o)$ along with
with the values of θ_o for which the sighting parameter

is practically equal to the smallest internuclear

Card 7/10   distance r_o of the two colliding particles. .

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Table 2.

Pair	θ_o	$\bar{\rho}(\theta_o)$, Å	$r_i + r_a$, Å
1	2	3	4
Kr^+ in Kr	1.5°	1	8
Kr^{2+} in Kr	0.7	1.5	7.5
Kr^{2+} in Ne	1.1	2.5	5.2
Ne^{2+} in Ne	0.9	7	3.5
Ne^{2+} in Kr	0.9	2	5.7
Kr^{3+} in Kr	0.75	2.3	6

The fourth row in Table 2 was computed using values
or formulas from the book by Gambosh (Statistical
Theory of Atom and Its Application, IL., M., 1951).
Whenever $\bar{\rho}(\theta_o)$ came out larger than $r_i + r_a$,
the authors deduced that Eq. (6) in that case is
not applicable. The differences in the width of
the angular distribution in cases of partial and
total neutralization of incoming ions the authors
tried to explain in the following manner: At an
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looks like V(r) curve 1 in Fig. 9.

Fig. 9.
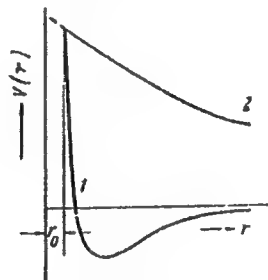
If there is no change in ionization   or if there

is a total neutralization, the V(r) curve remains
the same. In the case of a partial neutralization,
however, the interaction after collision is given
by the Coulomb curve 2. Professors V. M. Dukel'skiy
and D. M. Kaminker discussed the results, and A. M.
Shchenkov helped in the adjustment of the experi-
mental devices. There are 9 figures; 2 tables; and
13 references, 10 Soviet, 3 U.S. The U.S. references

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Simultaneous Electron Capture   SOV/57-30-1-8/18

                    are: E. Everhart. R. S. Carbone, G. Stone, Phys.
                    Rev., 98, 1045 (1955); R. S. Carbone, E. N. Fuls,
                    E. Everhart, Phys, Rev., 102, 1524 (1956); P. R.
                    Jones, F. P. Ziemba, H. A. Moses, E. Everhart,
                    Phys. Rev., 113, 182 (1959).
ASSOCIATION: Physico-Technical Institute AS USSR, Leningrad C.
                    (Fiziko-tekhnicheskiy institut AN SSSR, g.
                    Leningrad)
SUBMITTED: July 20, 1959

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82411

24,2120

AUTHORS: Fedorenko, N. V., Flaks, I. P., Filippenko, L. G.

TITLE: Ionization of Inert Gases by Multiply Charged Ions

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
               Vol. 38, No. 3, pp. 719-725

TEXT: Shervin (Ref. 2) investigated the ionization of hydrogen- and helium
molecules by multiply charged ions and found the ionization cross section to
be proportional to the square of the primary ion charge. This is in agreement
with the theory of collision ionization at high energies, but not with the
latest concepts of the mechanism of ionization. With a view to clarifying this
point, the authors of the present paper measured the ionization cross sections
for single collisions of the ions Ne^+, Ne^{2+}, Ne^{3+}, Kr^+, Kr^{2+}, Kr^{3+}, Xe^+,
Xe^{2+}, Xe^{3+}, and Xe^{4+} with the atoms of the gases Ne, Kr, and Xe. The experi-
mental setup had already been described in previous papers (Refs. 4-6). The
measuring condenser employed here is closely described, and is schematically
shown in Fig. 1. Measurements were made at a gas pressure of 1.10^{-4} torr,

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Ionization of Inert Gases by Multiply
Charged Ions

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which in turn was measured by means of an ionization gauge. Saturation currents, I_+ and I_- were measured on the plates of the measuring condenser in order to determine the cross sections. Formula (1) $\sigma_- = zI_-/NlI_0$; $\sigma_+ = zI_+/NlI_0$ can then be used to determine the total cross section of the liberation of electrons (σ_-) and the total cross section of the formation of secondary ions (σ_+); I_0 is the primary current of the beam, z is the multiplicity of the charge of primary ions, N the number of atoms per cm^3 of gas, l is the length of the measuring electrodes. σ_- is interpreted as being the total ionization cross section. It further holds that $\sigma_+ - \sigma_- = \sigma_0 - \sigma_1$, where σ_0 is the "total cross section" for capture, σ_1 the "total cross section" for stripping. In the energy range under investigation, $\sigma_1 \ll \sigma_0$, it holds that $\sigma_+ - \sigma_- \approx \sigma_0$. The relative error obtained when measuring σ_- and σ_+ is estimated as being 20%. Fig. 3 shows the dependence of the total ionization cross sections σ_- as a function of the kinetic energy of primary ions in six diagrams. Figs. 4 and 5 show the same functions for the capture cross

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Ionization of Inert Gases by Multiply Charged Ions   S/056/60/038/03/09/035
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sections: Fig. 4 offers a comparison between the values obtained by the poten-
tial method $(\sigma_+ - \sigma_-)$ and by the method of recording fast atoms. Fig. 5 of-
fers a comparison of the potential method with the mass-spectrometric method.
Results obtained did not confirm the quadratic law found by Shervin; the di-
verging results by Shervin are explained by the fact that Shervin did not
measure the cross sections at one and the same kinetic energy of the ions.
Results given here (voltage range 3-30 kev) indicate that the ionization cross
section for equal ion energies is practically independent of the charge of the
primary ion. For all ion-atom pairs a continuous growth of the cross section
with increasing kinetic energy of the primary ion was observed. Moreover, it
was found that results of measurement are in general well described by the
formula (equations (5) and (7)) given by O. B. Firsov (Ref. 1). This is
illustrated in Fig. 6. The authors finally thank Professor V. M. Dukel'skiy
for a discussion, and A. M. Shchenkov for his practical assistance. There are
6 figures and 11 references, 8 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR
               (Leningrad Institute of Physics and Technology of the Academy
               of Sciences, USSR)

SUBMITTED: September 12, 1959

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20931
S/057/61/031/003/016/019
B125/B209

26. 2340

AUTHOR: Flaks, I. P.

TITLE: Ionization in collision of singly charged ions and of Ne
                 and Kr atoms with atoms of noble gases

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 3, 1961, 367-375

TEXT: The present paper is a report on the measurement of the total
production cross sections σ_- of free electrons and σ_+ of slow secondary
ions in plain collisions of Ne^+ and Kr^+ ions and of fast Ne^0 and Kr^0 atoms
with atoms of all noble gases in the energy range of 3 - 30 kev. In these
measurements, the author employed the capacitor method. Reference is
made to a synoptic article by N. V. Fedorenko (UFN, 58, 481, 1959). The
present paper is a continuation of a paper by N. V. Fedorenko, I. P. Flaks,
L. G. Filipenko (ZhETF, 38, 719, 1960) and is intended to give further
explanations concerning the effect of the charge of the primary particle
upon the total ionization cross section of the gas atoms by comparing the
data on the cross sections of singly charged ions with those of fast

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neutral atoms. The author used the data on the cross sections σ_- and σ_+
also for determining the total stripping cross section of fast atoms, and
in the case of some ion-atom pairs also for determining the total capture
cross section of electrons through ions. Moreover, the author repeated
the measurements of the total cross sections for $Ne^+ + Ne$, $Ne^+ - Kr$,

$Kr^+ - Kr$, and $Kr - Ne$ pairs, which have been made in the above paper. The
experimental apparatus has already been described in the above-mentioned
previous paper, as well as in papers by I. P. Flaks, Ye. S. Solov'yev
(ZhTF, 28, 599, 612, 1958) and I. P. Flaks, L. G. Filipenko (ZhFT, 29,
1100, 1959). The slit system 16, 18, 19, and 20 (Fig. 1) guaranteed a
proper collimation of the beam. The pressure in the collision chamber
was measured by an LM2 ionization pressure gauge. The cross sections
σ_- and σ_+ were calculated from the approximation formula for single

collisions: $\sigma = \dfrac{kT_o}{p1}\left[\left(\dfrac{N}{N_o}\right)_p - \left(\dfrac{N}{N_o}\right)_\phi\right]$ (1). In this formula, N_o denotes
the intensity of the primary beam of ions or fast neutral atoms,
N - the intensity of the electron or ion saturation current impinging

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                                              B125/B209

upon the measuring strip, l the length of these strips, T_0 and p the
temperature and pressure of the gas in the collision chamber, and k
Boltzmann's constant. The index p indicates current measurements in the
gas to be examined, and the index ϕ indicates current measurements in the
residual gas. The relative probable error in the determination of the
error was below 15%. The second section of the paper is devoted to the
results of the measurements: A. Total ionization cross section: Fig. 2
illustrates the total ionization cross sectionsin collisions of
Ne^+ and Kr^+ ions as well as of fast Ne^o and Kr^o atoms with He, Ne, Ar,
Kr, and Xe atoms as depending on the kinetic energy of the impinging
particles. The ion charge affects the absolute value of σ_- only slightly.
B. Total production cross section of secondary ions: Fig. 3 presents the
energy dependence of the total production cross section $\sigma_+(T)$ of ions and
fast Ne and Kr atoms in collisions with the atoms of all noble gases. The
relation $\sigma_- = 2\sigma_+$ is valid with fairly good accuracy. Figs. 3, 4, and 5

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depict the total electron capture cross section and the total stripping cross section of neutral atoms: The difference between the measurements of the present paper and those made by F.J.De Heer, W. Huizenda, and J. Kistemaker (Physica, 23, 181, 1957) is not greater than 30%. Discussion of results: According to calculations made by O. B. Firsov (ZhETF, 39, 1517, 1959), the universal curve established by Firsov agrees with the experiment for collisions of gas atoms with ions of various charges. The conclusions drawn from data of a paper by Fedorenko, Flaks, Filipenko (viz., that the total ionization cross section depends only slightly on the charge of the primary particle) hold also for the ionization of gas atoms by fast neutral atoms. This is also illustrated by Fig. 6. The relatively small differences in the cross sections σ_- (Figs. 6, 2) are evidently due to the individual characteristics of the colliding particles. In the collision of two atomic particles, the escape of weakly bound electrons is the most probable, independently of the atomic particle in whose shells they are located. In the collision of a light primary particle with a heavy atom, ionization of the atom is more likely to occur, whereas in the collision of a heavy primary particle with a lighter atom, stripping is the more probable reaction. The increase in the ionization or stripping cross section in a gas is probably due to
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particular quantum-mechanical effects. The curve for $\sigma_-(v)$ for an Ar^0-Ar
pair runs between the $\sigma_-(v)$ curves of Ne^0-Ne and Kr^0-Kr pairs, which were
determined by the author. The author thanks Professor N. V. Fedorenko
and V. M. Dukel'skiy for their interest in the present paper and for
valuable hints. G. N. Ogurtsov and A. M. Shchenkov assisted in the
experimental part. There are 7 figures and 14 references: 10 Soviet-bloc
and 4 non-Soviet-bloc. The most recent references to English-language
publications read as follows: H. B. Gilbody, J. B. Hasted, Proc. Roy.Soc.,
A 240, 382, 1957; F. J. De Heer, W. Huizenda a. J. Kistemaker, Physica,
23, 181, 1957.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe, AN SSSR,
             Leningrad
             (Institute of Physics and Technology imeni A. F. Ioffe, AS USSR
             Leningrad)

SUBMITTED: July 16, 1960

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FLAKS, I.P

Reports presented at the 5th Intl. Conference on Ionization Phenomena in Gases, Munich, 28 August - 1 September 1961.

a. G A Barilovskaya, A M Andrianov, V P Britcher and V I Vasilyev
"Investigation of a Pulse Discharge in a Hollow Cylindrical Gas Sheath"

b. D G Brezhnev Yu S Maksimov
"Energy Measurements of Fast Electrons Formed During a Powerful Pulse Discharge" Chamber

c. A B Berezin, A E Zaydel, and G M Malyshev
"On Methods of Spectroscopic Investigation of the Hydrogen Discharge Chamber Walls Interactions"

d. V P Kitayev, N M Cobolev
"On the Hydrogen Lines Broadening Under the Carbon Arc and Detonation Wave Conditions"

e. E G Alikhanov R A Demirkhanov, A V Kirov, G G Podleany, G I Chistunov
" An Investigation of Plasma Diffusion in the Magnetic Field"

f. V S Vorobiev, Yu V Skvortsov V V Sredukhenko S S Tserevitinov
"Dynamical Current Cord"

c. N M Sobolev
"A Spectroscopically Studied State of Gases Following the Detonation Wave"

h. B N Ilin, Ye S Solovyev N V Fedorenko
"Molecular Hydrogen Ionization by Gas Hydrogen Atoms"

i. I P Flaks, G N Omartsov
"Ionization of Gases Induced by Multi-charged Ions"

j. P N Marmey, L A Plionova
"The Source for Molecular Hydrogen Ions Formation at the Gas Device"

k. A L Bezbatchenko V V Sametsev E P Volakhov N N Semesibko
"Injection of an Ionic Beam into the Open Magnetic Trap"

l. V Ye Yurasova
"On Directed Emission of Particles from a Copper Single Crystal Sputtered by Bombardment with Ions"

28924
S/056/61/041/004/008/019
B108/B102

26.2340

AUTHORS: Flaks, I. P., Ogurtsov, G. N., Fedorenko, N. V.

TITLE: Production of slow ions in gases by fast atom and ion beams

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 4(10), 1961, 1094-1103

TEXT: The authors determined the production cross section σ_{0k} of slow ions with the charge k in order to explain its dependence on the charge of the primary particles. Collisions between Ne, Ar, Kr, and Xe atoms and fast Ne^{0}, Ne^{+}, Ne^{2+}, and Ne^{3+} particles, as well as between Kr and Xe atoms and fast Kr^{0}, Kr^{+}, Kr^{2+}, and Kr^{3+} particles have been studied. The experimental arrangement which has been described previously (I. P. Flaks. ZhTF, 31, 367, 1961), was supplemented by an analyzer for slow secondary ions (Fig. 1). Measurements were made with primary particle energies of 3 - 30 kev. The ion production cross section was determined from the relative line intensity. In general, the overall error did not exceed 15%. It was

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Production of slow ions in gases by ...   B108/B102

found that, as a rule, δ_{0k} increases with the charge and the energy of the
primary particles. In atom-atom collisions, only pure ionization is
responsible for the production of slow ions. With rising charge of the
primary particles, ionization is more and more governed by the contribution
of resonance charge exchange and of ionization with capture. The last
item is evaluated for collisions between atoms and singly-charged ions.
Professor V. M. Dukel'skiy is thanked for a discussion. There are 8
figures, 1 table, and 9 Soviet references.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk
               SSSR (Leningrad Physicotechnical Institute of the Academy
               of Sciences USSR)

SUBMITTED: May 29, 1961

Fig. 1. Ion analyzer. Legend: ϕC - focusing system, π - slow ions
produced by a fast atom or ion beam passing through gas, C - capacitor,
O - grid window, K - metal casing, KC - collision chamber, $\mathrm{Щ}_1$ - stop,

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26698
S/056/61/041/005/013/038
B109/B102

26.2340

AUTHORS: Flaks, I. P., Ogurtsov, G. N., Fedorenko, N. V.

TITLE: Ionization by collision between Ne^{n+} and Xe and between Xe^{n+} and Ne atoms (n = 0, 1, 2, 3, 4)

TEXT: In order to clarify the effect of the charge of ionized atoms upon the production of free electrons, the authors measured the total ionization cross section σ_- (accuracy 15%) for single collisions between fast charged and neutral atoms. A method described by N. V. Fedorenko, I. P. Flaks, and L. G. Filippenko (ZhETF, $\underline{38}$, 719, 1960) has been used. The accelerating voltage ranged from 3 to 30 kv. Results of the measurements: The total ionization cross section σ_- of Xe atoms as a function of the Ne^{n+} velocity v is shown in Fig. 1. Fig. 2 renders σ_- of Ne atoms as a function of the Xe^{n+} velocity v. It was found that σ_- increased for

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Ne^{n+} - Xe and decreased for Xe^{n+} - Ne with increasing fast-particle charge n. The results are interpreted as follows: The increase of σ_- with rising charge of the fast particles is due to the possible exothermic ionization processes involving capture. In Ne^{n+} - Xe collisions, the ionization process of Xe predominates over the stripping process of Ne^{n+} which requires a considerably higher energy. The stripping process can add to a decent contribution only in Ne^0 - Xe collisions. The dependence is the opposite when ionization with capture is an endothermal process and when the main contribution to σ_- is due to stripping of fast atomic particles. Professor V. M. Dukel'skiy is thanked for discussions. O. B. Firsov (ZhETF, $\underline{36}$, 1517, 1959) is mentioned. There are 2 figures and 8 Soviet references.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut (Leningrad Physicotechnical Institute)

SUBMITTED: June 9, 1961

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S/056/62/042/003/012/049
B104/B102

AUTHORS: Ogurtsov, G. N., Flaks, I. P.

TITLE: Charge exchange of Xe^{3+} and Xe^{4+} ions in neon

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 3, 1962, 721 - 724

TEXT: The capture cross section of one electron in single collisions of fast Xe^{3+} and Xe^{4+} ions with Ne atoms was measured with an experimental arrangement as described in previous papers (ZhTF, 28, 599, 612, 1958; ZhTF, 29, 1100, 1959). For accelerating voltages between 2 and 30 kev, the total capture cross sections σ^{32} and σ^{43} attain values up to $10^{-15} cm^2$. σ^{32} is larger than σ^{43} and attains a maximum value at a relative ion velocity of $v \approx 1 \cdot 10^7$ cm/sec. σ^{43} increases with increasing energy of the Xe^{4+} ions in the entire velocity range investigated. A comparison of the experimental data with results calculated by the Landau-Zener method of pseudo-intersection of potential energy curves (formula

$$\sigma^{nm} = (kT_0/pl) [(N_m/N_n)_p - (N_m/N_n)_\phi], \qquad (3))$$

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Charge exchange of Xe^{3+} and...

shows good agreement for σ^{32} and σ^{43} (Fig.). N_n is the intensity of the ion beam entering the collision chamber, N_m is the intensity of the secondary ion beam. The indices "p" and "ϕ" refer to measurements at working pressure of the investigated gas and at residual gas pressure. O.B. Firsov is thanked for valuable remarks, N. V. Fedorenko and V. M. Dukel'skiy for interest. There are 1 figure, 1 table, and 11 references: 4 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: D. R. Bates, B. L. Moiseiwitsch, Proc. Phys. Soc., A67, 805, 1954; A. Dalgarno, Proc. Phys. Soc., A67, 1010, 1954; T. J. M. Boyd, B. L. Moiseiwitsch, Proc. Phys. Soc., A70, 809, 1957; D. R. Bates, Proc. Roy. Soc., A257, 22, 1960.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut Akademii nauk SSSR (Leningrad Physicotechnical Institute of the Academy of Sciences USSR)

SUBMITTED: October 12, 1961

Card 2/3

Haks, L. A.   10

ACCESSION NR: AP3004484   s/0048/63/027/008/0994/0995

AUTHOR: Sena, L. A.

TITLE: Second All-Union Conference on the Physics of Electron and Atom Collisions [Uzhgorod, 2—9 October 1962]

SOURCE: AN SSSR. Izvestiya, ser. fiz., v. 27, no. 8, 1963, 994-995

TOPIC TAGS: conference, electron collision, atom collision, collision physics

ABSTRACT: The II Vsesoyuznaya konferentsiya po fizike elektronny*kh i atomny*kh stolknoventy (Second All-Union Conference on the Physics of Electron and Atoms Collisions), was held in Uzhgorod, 2—9 October 1962. The following reports were presented: "Theory of the charge-exchange process during atomic collisions," by Yu. N. Demkov; "Charge-exchange of multicharge ions," by I. P. Flaks; "Ionization due to atomic collisions," by N. V. Fedorenko; "Excitation of Atoms and molecules due to electronic collisions," by L. P. Zapesochny*y; "Charge exchange and ionization during atomic collisions in the high-energy range," by V. S. Nikolayav; "Photoionization of gases and vapors by vacuum ultraviolet radiation," by Academician A. N. Terenin and F. I. Vilesov; "Effective cross sections of

atomic collisions important in the theory of gaseous quantum generators," by I. I. Sobel'man; "Dissociation of molecules and ions during collisions of fast particles," by N. N. Tunitskiy; and "Corpuscular diagnostic of plasma," by V. V. Afrosimov.

ASSOCIATION: none

L 9884-63   EWT(1)/EWG(k)/ES(w)-2/BDS--AFFTC/ASD/
ESD-3/SSD--Pz-4/Pab-4--AT/IJP(C)
ACCESSION NR: AP3001338   S/0057/63/033/006/0748/0753
                                                                  70
AUTHOR: Flaks, I. P.; Ogurtsov, G. N.   68

TITLE: Charge exchange and ionization during collisions of nitrogen atoms and
ions with hydrogen molecules

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 6, 1963, 748-753

TOPIC TAGS: charge exchange, ionization cross section

ABSTRACT: Charge exchange and ionization processes during collisions of atomic
particles N^0, N^+, N^{2+}, and N^{3+} with H_2 molecules have
been investigated and their collision cross sections measured within the range
of accelerating voltages from 1 to 30 kv. The investigation included the
measurement of charge-exchange cross sections when the ionic charge is totally
or partially neutralized and measurements of total-ionization cross sections for
the pairs N^0--H_2, N^+--H_2, N^{2+}--H_2, N^{3+}--H_2
sub 2, and N^0--H_2. The experimental apparatus consisted of an arc-
type ion source operating in a longitudinal magnetic field, a magnetic

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L 9884-63
ACCESSION NR: AP3001338

2

monochromator for isolating the primary-ion beam of a given charge, a collision
chamber with a sectionalized condenser for extracting free electrons and slow ions
produced in gas, a magnetic analyzer for isolating fast ions subjected to partial
neutralization, and a charge-exchange chamber for obtaining a beam of neutral
atoms. It was found that in the range of average energies the curves of single-
electron transfers have a flat maximum, while for N sup 3+ the Sigma sup 32 curve
increases continuously. The cross sections of single-electron transfers are
virtually independent of nitrogen-ion charge and reach a magnitude of (6-7) x
10 sup -16 cm sup 2. The cross sections of double-electron transfers do not
exceed 1.5 x 10 sup -16 cm sup 2. The total cross section of ionization is
approximately equal for the pairs N sup +--H sub 2 and N sup 2+--H sub 2 and
increases sharply for N sup 3+ ions. "In conclusion the authors express deep
gratitude to N. V. Fedorenko for his valuable recommendations and constant
interest in this work." Orig. art. has: 5 figures and 1 formula.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR,
(Leningrad Physicotechnical Institute AN SSSR)

SUBMITTED: 07May62   DATE ACQ: 01Jul63   ENCL: 00

SUB CODE: 00   NO REF SOV: 009   OTHER: 004

Card 2/2

L 01217-66   EWT(1)/EWT(m)/EWP(b)/EWP(t)   IJP(c)   JD/JG

AUTHOR: Kikiani, B. I.; Ogurtsov, G. N.; Fedorenko, N. V.; Flaks, I. P.

TITLE: Ionization produced during collisions of alkali metal atoms with gas molecules

TOPIC TAGS: collision, collision cross section, gas ionization, alkali metal, atom

ABSTRACT: The results are presented of extensive investigations of ionizing collisions between Li, Na, K, and Cs fast atoms and He, Ne, Ar, Kr, and Xe atoms and H_2 and N_2 molecules. The study was performed in the 3—30 kev energy range. The average results of independent measurements are presented in a table which gives the cross sections of free electron production and of ionization and stripping cross sections. When possible, the data obtained were compared with those of other authors. A comparison of ionization cross sections of gases with stripping cross sections of alkali metal atoms showed in many cases the prevalence of ionization events. It is stressed, however, that in the interactions of alkali metal molecules with the molecules of H_2 and N_2, the stripping cross sections prevailed over the ionization cross sections of the molecules in the whole range of energies. This

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ACCESSION NR: AP5021095

difference was most marked in $Li-H_2$ and $Na-H_2$ collisions, i.e., in the collisions of the lightest particles. As a rule, the ionization cross sections showed a continuous increase with the increasing velocity of the colliding particles. At a given velocity, the cross sections increased with the increasing atomic numbers of the particles. Here, however, an exception was observed for pairs with close values of their atomic numbers (e.g., Li-He, Na-Ne, K-Ar, Cs-Xe). The authors feel that their work may be useful in the corpuscular diagnosis of plasmas, and in the study of ionic engines, astrophysics, and mass-spectrometry. Orig. art. has: 3 figures, 1 table, and 3 formulas. [ZL]

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe Akademii nauk SSSR (Physicotechnical Institute, Academy of Sciences, SSSR)

SUBMITTED: 23Feb65   ENCL: 00   SUB CODE: NP

NO REF SOV: 007   OTHER: 005   ATD PRESS: 4098

Card 2/2

L 10672-66   EWT(1)/EWT(m)/EWP(t)/EWP(b)   LJP(c)   JD/JG

ACC NR: AP5028324   SOURCE CODE: UR/0057/65/035/011/2076/2082

AUTHOR: Flaks, I.P.; Kikiani, B.I. Ogurtsov, G.N.

ORG: Physico-technical Institute im. A.F.Ioffe, AN SSSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: Ionization of gases by alkali metal ions

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 11, 1965, 2076-2082

TOPIC TAGS: inert gas, alkali metal, positive ion, ionization cross section, nitrogen, hydrogen, gas ionization

ABSTRACT: The cross sections for ionization of H_2 and N_2 molecules and He, Ne, Ar, Kr, and Xe atoms by 1-30 keV Li^+, Na^+, K^+, and Cs^+ ions were measured with apparatus and techniques that have been described elsewhere (I.P.Flaks, ZhTF, 31, 367, 1961; B.I.Kikanin, G.N.Ogurtov, N.V.Fedorenko, and I.P.Flaks, ZhTF 49, 379, 1965), and the results are presented graphically, discussed, and compared with the results of other investigators and with the theory of O.B. Firsov (ZhETF, 36, 1517, 1959). The beam current was 10^{-7}-10^{-8} A; the pressure in the collision chamber was kept below 1.5 x 10^{-4} mm Hg in order to minimize multiple collisions; the ionization cross sections were derived from measurements of the electron currents. The results were found to be in good agreement with those of W.Sherwin (Phys.Rev., 57, 814, 1940) and J. van Eck, F.J. de Heer, and J. Kistemaker (Proc. V Int. Conf. on Ioniz. Phenom. in Gases, 54,

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L 10672-66

ACC NR: AP5028324 O

Munich, 1964). Larger cross sections were found by C.A.Frische (Phys.Rev., 43, 160, 1933) and N.V.Fedorenko (ZhTF 31, 367, 1961). The discrepancy between the present Na^+ --Ar cross sections and those of Fedorenko are ascribed to incorrect pressure measurements by Fedorenko. The interactions of Ar and Kr with Na^+, K^+, and Cs^+, of Ne with Na^+ and K^+, and Xe with K^+ and Cs^+ satisfied the conditions for the applicability of Firsov's statistical theory (loc. cit.). The measured ionization cross sections lay close to Firsov's universal curve, and it is concluded that Firsov's approximate theory affords a useful description of the magnitudes and energy dependences of the cross sections for ionization of inert gases by alkali metal ions. All the cross sections increased monotonically with increasing energy of the bombarding ion. With the two exceptions noted below, the cross section for ionization of an inert gas atom by an alkali metal ion was very nearly equal to the cross section for ionization of the same inert gas atom by the corresponding neutral alkali metal atom. The two exceptions found to this rule are: 1) The measured cross sections for ionization by Cs^+ ions were considerably greater than the corresponding cross sections for ionization by Cs atoms. This is ascribed to appreciable contribution of electron stripping from the Cs^+ ion to the measured cross sections for ionization by Cs^+ ions. (The cross sections for ionization by Cs atoms were measured by a different technique (Flaks (1961), loc. cit.) and electron stripping from the Cs atoms did not contribute to the observed cross sections.) 2) Except for ionization of He by Li^+, the cross

sections for ionization of inert gases by alkali metal ions having the same electron

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L 10672-66

ACC NR: AP5028324

shell structure were considerably greater than the cross sections for ionization of the same inert gases by the corresponding alkali metal atoms. Orig. art. has: 8 figures

SUB CODE: 20   SUBM DATE: 15Apr65/   ORIG. REF: 005   OTH REF: 010

Card 3/8

L 21709-66   EWT(1)/EWT(m)/EWP(t)   IJP(c)   JD/AT

ACC NR: AP6004886   SOURCE CODE: UR/0057/66/036/001/0117/0122

AUTHOR: Ogurtsov, G. N.; Flaks, I. P.

ORG: Physicotechnical Institute im. A.F.Ioffe, AN SSSR, Leningrad (Fiziko-tekhnich-eskiy institut AN SSSR)

TITLE: Dissociative charge exchange and ionization in collisions of neon atoms and ions with carbon monoxide

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 1, 1966, 117-122

TOPIC TAGS: ionization cross section, carbon monoxide, neon, charge exchange, excitation energy, positive ion, particle collision

ABSTRACT: The authors have measured the cross sections for production of C^+, O^+, C^{2+}, O^{2+}, C^{3+}, CO^+, CO^-, C^-, and O^- ions in collisions between CO molecules and Ne atoms and Ne^+, Ne^{2+}, and Ne^{3+} ions accelerated in potentials from 3 to 30 kV. The experimental apparatus and technique have been described in a series of earlier papers by the authors and collaborators (ZhETF, 41, 1438, 1961; ZhETF, 38, 719, 1960; ZhTF, 31, 367, 1961; ZhETF, 41, 1094, 1961). The cross sections for production of positive ions were measured with an accuracy of 15%; the cross sections for production of negative ions were measured with less accuracy. The results are presented graphically and are discussed. The total ionization cross section increased monotonically with incident

Card 1/2   UDC: 537.56

L 21709-66

ACC NR: AP6004886   /

particle velocity; total ionization cross sections as large as 8×10^{-16} cm^2 were measured. The total ionization cross section was nearly independent of the charge on the incident particle; from this it is concluded that "potential ionization" processes are not significant. The cross sections for production of the various positive ions are discussed in terms of possible endothermic and exothermic reactions, and it is concluded that processes leading to the excitation of reaction products are more probable than the "potential ionization" processes previously detected by the authors and N.V.Fedorenko (ZhETF, 41, 1438, 1961) in collisions between multiply charged ions and rare gas atoms. Cross sections for production of O^-, C^-, and CO^- ions were of the order of 10^{-18}, 10^{-19}, and 10^{-20} cm^2, respectively. The detection of CO^- ions with lifetimes exceeding 10^{-6} sec is significant, because the possibility of the existence of a stable CO^- ion has been disputed (D.V.Pilipenko and Ya.M.Fogel', ZhETF, 42, 936, 1962). The authors thank N.V.Fedorenko for valuable discussions and advice, and his interest in the work. Orig. art. has: 27 (chemical) formulas and 8 figures.

SUB CODE: 20/   SUBM DATE: 20May65/   ORIG REF: 005/   OTH REF: 003

Card 2/2

L 25499-66   EWT(l)/EWT(m)   IJP(c)   JD/JG

ACC NR: AP6011395   SOURCE CODE: UR/0057/66/036/003/0491/0496

AUTHOR: Ogurtsov, G.N.; Flaks, I.P.; Kikiani, B.I.

ORG: Physicotechnical Institute im. A.F. Ioffe, AN SSSR, Leningrad (Fiziko-tekh-nicheskiy institut AN SSSR)

TITLE: Charge exchange of alkali metal ions in collisions with gas atoms and molecules

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 3, 1966, 491-496

TOPIC TAGS: charge exchange, particle cross section, alkali metal, neon, argon, krypton, xenon, nitrogen, hydrogen, collision cross section

ABSTRACT: The charge exchange cross sections of 1 to 30 keV Li^+, Na^+, K^+, and Cs^+ ions on Ne, Ar, Kr, and Xe atoms and H_2 and N_2 molecules have been measured by a single collision technique. The authors have described their apparatus in detail elsewhere (ZhETF, 49, 379, 1965; ZhTF, 35, 2076, 1965; ZhTF, 29, 1100, 1959). The ion beam passed through the collision chamber containing the target gas at a pressure of about 1.5×10^{-4} Hg and was swept clear of charged particles by an electrostatic field. The neutral particles remaining in the beam were received in a Faraday cup and their flux was determined from the secondary electron emission to which they gave rise. A background flux measured with the collision chamber empty was subtracted from the measured flux before the cross section was computed. The geometry was such

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ACC NR: AP6011395   2

that particles scattered through angles less than 5° would be recorded. It is esti-
mated that at energies below 3 keV, loss of particles from the beam by scattering may
have resulted in underestimation of the cross section by as much as 20%. All the
measured charge exchange cross sections increased with increasing relative velocity
of the colliding particles, as would be expected on the basis of the adiabatic hypo-
thesis in view of the large energy defects. The cross sections at 30 keV ranged from
10^{-17} to 3×10^{-16} cm^2. The cross sections of the different alkali metal ions on
the same target gas and for the same relative velocity increased with increasing mass
of the ion, even though the energy defects are greater for the heavier ions. This
phenomenon is explained as a result of the greater polarizability of the heavier
alkali metal atoms. The present results are in good agreement with those of N.V.
Fedorenko (ZhTF, 24, 2113, 1954) for Na^+ on Ar and with those of S.K.Allison,J.Cuevas,
and M.Garcia-Munoz (Phys.Rev.,120, 1266, 1960) for Li^+ on N_2 but there are large
discrepancies between the present results and other data in the literature. The
authors thank N.V.Fedorenko for his interest and valuable advice, and G.V.Dubrovskiy
for discussing the results. Orig. art. has: 3 formulas, 6 figures and 1 table.

SUB CODE: 20   SUBM DATE: 26May65   ORIG. REF: 004   OTH REF: 008

Card 2/2 CC

LUKINSKAYA, A.M.; FLAKS, M.I.(Voronezh)

Characteristics of Sonne's acute dysentery. Klin.med. 33 no.5:
62-65 My '55.   (MLRA 8:9)

1. Iz kliniki infektsionnykh bolezney (I.o.zav. kafedroy
dotsent M.A. Zeytlenok)
        (DYSENTERY, BACILLARY
            clin.characteritsics of sonnei dysentery, compa-
            rison with Flexner's dysentery)

FLAKS, M.I., podpolkovnik meditsinskoy sluzhby

Some clinical aspects of the course of dysentery caused by Newcastle
bacteria. Voen.-med.zhur. no.10:74 O '59.   (MIRA 13:3)
(DYSENTERY)

L 26377-66

ACC NR: AP6007660   (A)   SOURCE CODE: UR/0413/66/000/003/0028/0028

AUTHORS: Barenboym, I. Yu.; Dubrova, Ye. P.; Vasil'yev, V. D.; Lurik, N. M.;
Radzevich, Ye. N.; Spitkovskiy, S. A.; Fuks, G. B.; Fel'dman, M. B.; Leybman,
Ya. M.; Kolomoytsev, B. B.; Flaks, V. A.; Khandzhi, V. V.; Gol'dfel'd, L. M.;
Lifshits, I. L.

ORG: none

TITLE: A means of erecting railroad bridges of arched-span construction from
separate sections. Class 19, No. 178393

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3, 1966, 28

TOPIC TAGS: bridge, bridge construction, structural engineering, railroad bridge,
cantilever bridge

ABSTRACT: This Author Certificate presents a means for erecting railroad bridges of
arched span construction from separate sections. The sections are suspended and
joined with struts of the structure above the arch by temporary sloping and horizontal
members. These members serve as cross-stays and upper booms. The sections also
feature a cantilever truss (see Fig. 1) with a triangular framing, the lower girder
of which forms a semi-arch. The upper girder of the cantilever truss is set above
the travel span, which includes separate elements of the truss used in mounting and
elevating the structure. These members subsequently form a triangular cantilever

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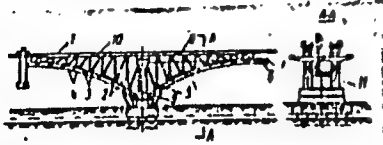
L 26377-66

ACC NR: AP6007660

Fig. 1. 1 - upper string of the cantilever truss; 2 - struts; 3 - slanting members; 4 - lower string panels; 5 - anchor post; 6 - key block; 7 - floor plates; 8 - cables; 9 - anchor block; 10 - tension cables; 11 - joints.

frame, cross-stays and semi-arch sections. Each panel thus formed serves as a support for the next panel. The panels are rigidly fastened along the entire face, the process being repeated until the entire semi-arch is formed. Then cables are placed between the link sections and the support. When the cables are tightened, the semi-arches are rotated with respect to the support section, thus unloading the diagonal and horizontal members of the cantilever. The cables are removed, after which the travel-span plates are placed upon the structure above the arch between the link sections of the semi-arch and the support. When the wearing surface is completely laid, the remaining part of the cables is tightened. Favorable working conditions for the support are created by freeing the support from one-sided loadings; assembly of the semi-arch takes place simultaneously on both sides of the pier, with each addition being a cantilever addition. The abutment portion of the semi-arch is prepared in place between the first support block of the semi-arch and the pier. Forces in members of the cantilever are lessened by the introduction of stiffener cables in the upper girder at 1/2--2/3 of its design length. Moments in panels on the semi-arch are reduced through a skewed arrangement of axes of diagonals relative to points of intersection of the axes of vertical members and the semi-arch blocks. Joints are placed between adjacent semi-arches on the assembled panels, thus controlling the position of cantilever frames in the span. Orig. art. has: 1 figure.

Card 2/2 SUB CODE: 13/   SUBM DATE: 14Nov64

S/169/62/000/011/014/077
D228/D307

AUTHORS: Dmitriyev, M.K., Flaks, Ya.Sh. and Golovin, A.P.

TITLE: Trial application of radiometric investigations for direct oil-field searches in Bashkiriya

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 11, 1962, 59-60, abstract 11A357 (In collection: Yadern. geofiz. pri poiskakh polezn. iskopayemykh, M., Gostoptekhizdat, 1960, 206-219)

TEXT: The institut GiRGI AN SSSR (Institute GiRGI, AS USSR) and the Trest Bashneftegeofizika (Bashkir Petroleum Geophysics Trust) conducted joint investigations on the territory of the Bashkir ASSR in order to clarify the potentialities of radiometric methods in searches for oil and gas fields. Areal airborne gamma-ray surveying was carried out in areas with an unestablished oil content and also over known oil fields, on a scale of 1:100,000. This was followed by ground operation detailing: car and foot beta-gamma-ray surveying, mapping drilling, and soil-lithologic mapping with the

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S/169/62/000/011/014/077
D228/D307

Trial application ...

selection of samples for laboratory research. The following complex of laboratory investigations was employed to analyze the rock and soil samples: 1) radiometric determination, 2) pH and humus determinations, 3) mechanical analysis, and 4) spectral analysis. It is mentioned that the zone, in which the gamma-activity of surface deposits inside the boundary of a pool is characteristically lowered and reaches 20-25% of the surrounding field's intensity, is outlined by a band of heightened gamma-field intensity values. These exceed the background values outside the anomaly by up to 10%. Thus, the overall effect of an anomaly increases up to 35% from the average background. However, variations in the intensity of the gamma-field, which are connected with the influence of different surface factors (lithology of the covering and indigenous deposits, topography, drainage, soil and plant cover), reach 35-50% of the measurable value and are a serious impediment. Therefore allowance was made in the interpretation for the effect of these factors on the radiometric field by comparing radiometric, geologic, topographic and structural maps in order to eliminate anomalies related to their influence. More than 70 zones of reduced gamma-activity, of which

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Trial application ...

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48 were subjected to further study, were revealed as a result of the work. It is concluded: 1) the distribution of anomalies over oil fields and in areas with an unestablished oil content is close, which confirms the similarity of the genesis of these anomalies; 2) of the total number of anomalies obtained over oil fields 89% pertains to anomalies, which cannot stem from the influence of surface factors or can be explained only partially. This circumstance indicates that effective interpretation of gamma-ray surveying data may be carried out subject to allowance being made for the influence of surface factors. Oil fields were revealed by subsequent drilling on several of the radiometric anomalies detected. On the basis of the results obtained it is concluded that the radiometric method of seeking oil fields is effective geologically, and it is recommended that the method should be included in the complex of geophysical investigations.

/ Abstracter's note: Complete translation /

Card 3/3

FLAKS, V., inzh.

Corrosion resistance of the steel elements of ferrous metallurgy enter-
prises. Prom. stroi. i inzh. soor. 5 no.2:24-28 Mr-Ap '63.

(MIRA 16:4)

(Corrosion and anticorrosives)   (Steel, Structural)(Aluminum alloys)

FLAKSERMAN, A N

SAFRONOV, G. A., and A. N. FLAKSERMAN.

Issl dovanie fiziko-mekhanicheskikh svoistv drevesiny iasenia, berezy i klena. Moskva, 1931. 64 p., diagrs. (TSAGI. Trudy, no. 79)

Summary in English.

Title tr.: Investigation of physical and mechanical properties of ash, birch and maple.

QA911.M65 no. 79

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.